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ABSTRACT

In the period from 1950 to 1970, there were 298 persistent low-income (PLI) counties in the United States, but between 1970 and 1975, 43 counties left the persistent low-income status (LPLI) due to private sector influence and earnings from mining and agriculture. LPLI counties were largely located in Georgia, Arkansas, and Kentucky. Most PLI counties were located in the South, and had small populations, a large percentage of which was Black. Compared to nonmetropolitan averages, PLI counties in 1969 had a lower per capita income, lower average earnings and were more dependent on transfer payments and proprietors' income, especially from farms. A smaller percentage of the PLI population were wage and salary employees. PLI counties evidenced low family and health status, yet despite more severe conditions residents were less alienated. Although PLI and LPLI counties depended on the same three industries (manufacturing, agriculture, government), the LPLI counties' greatest dependence was on agriculture while that of PLI counties was on government. Counties depending on mining may make future income gains, but those depending on agriculture have a less certain future. PLI counties for 1969-1975 are listed by state. (SB)

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PERSISTENT LOW-INCOME COUNTIES IN NONMETRO AMERICA

Thomas F. Davis

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ABSTRACT

During 1970-75, 43 counties with increased earnings from mining and agriculture shed their persistent low-income status. There had been 298 such counties as of 1969. The majority of those 298 were located in the South. These counties had small populations, relied on agriculture for a large percentage of employment and earnings, and had a large Black population.

Key words: Low-income areas, nonmetro income, per capita income, agricultural earnings

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SUMMARY

During 1970-75, 43 of 298 nonmetro counties that had been classified in 1969 as persistent low-income (PLI) counties had prospered enough to escape that designation. This study identifies persistent low-income areas and their associated socioeconomic characteristics for policymakers dealing with this part of nonmetro America.

Low-income counties are usually located in the South, have small populations which are largely Black, and rely on agriculture for a large percentage of employment and earnings.

Of the 43 counties shedding their low-income status, all but one were located in the South, with Georgia, Kentucky, and Arkansas accounting for over half. Increased earnings from mining and agriculture apparently accounted for most of the improvement.

Analysis of Federal outlays data shows that Federal money had little impact in low-income nonmetro counties. Thus it appears that circumstances in the private rather than the Federal (public) sector contributed to income gains.

Those counties depending on coal mining may continue to make future income gains, given increased prices for coal. The future is less certain for counties relying on favorable agricultural prices for increased income.

Persistent Low-Income Counties in Nonmetro America

Thomas F. Davis

INTRODUCTION

Despite Federal programs aimed at raising incomes in nonmetro America, low earnings and thus a lower standard of living persist in many rural counties. For policymakers to deal with problems of low-income counties, they must first identify these areas and their associated socioeconomic characteristics. This study presents one method of defining nonmetro areas with persistent low incomes, using a variety of data sources (9, 10, 11, 12, 13, 14). 1/

This report identifies 298 nonmetro counties that had persistent low incomes during the 1950-70 period. The population, employment, and income characteristics of these counties for 1969-75 are analyzed. Forty-three counties shed their persistent low-income status during this period. The underlying factors contributing to improved incomes in these counties are examined.

This analysis incorporates data from the Bureau of the Census and the Bureau of Economic Analysis, U.S. Department of Commerce. Since 1975 is the latest year for which these data are available, the discussion of the 43 counties shedding their persistent low-income status is confined to the 1969-75 period.

DEFINITIONS

The Bureau of Economic Analysis of the U.S. Department of Commerce annually compiles data on income by source and industry and on employment by industry for all U.S. counties (9, 10). These data were used to calculate the income and employment variables for the nonmetro counties analyzed in this study. 2/

Personal income, as defined by the Bureau, includes wage and salary income, self-employment or proprietorship income, property income, and transfer payments for all persons residing in the county (10) [called residence adjusted personal income in this report (RPI)]. Per capita income equals RPI divided by the total population in the

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1/ Underscored numbers in parentheses refer to literature listed in the references section at the end of this report.

2/ Nonmetro counties are those not designated Standard Metropolitan Statistical Areas (SMSA). An SMSA is a county or group of contiguous counties which contain at least one city of 50,000 inhabitants or more (10, 12, 13, 14).

county. Relative per capita income is defined as the ratio of per capita income for the county to the U.S. per capita income.

Employment variables include total and average earnings and sources of employment and earnings, by industry. Total earnings equal the sum of wage and salary disbursements, other labor income, and proprietors' income. Average earnings are determined by dividing total earnings by total wage and salary employment. Percentage of total earnings for each industry equals earnings for each specific industry divided by total earnings. 3/ Dividing employment in each specific industry by total employment (part- and full-time) yields percentage of total employment.

Series P-25 and P-26 of the Current Population Reports (13) were used to determine the total population, population growth rate, and net migration rate for each county. The population growth rate is the percentage change in population for a county during 1970-75 divided by 1970 population for that unit. The net migration rate equals the number of inmigrants to the county during 1970-75 minus the number of outmigrants from that county in the same time frame, divided by the 1970 population of that area.

The 1970 Census of Population (12) was the basis for data concerning the Black population, retirement counties, and college counties. The percentage of a county's population that was Black as of 1970 defines the race variable used here. The race variable is included in the analysis due to its historically high correlation with low-income levels.

As of 1970, retirement counties as defined by Beale are nonmetro areas with a 1960-70 net migration for Whites 60 years and over greater than or equal to 10 percent (1). In 1974, retirement counties are those described above plus counties that meet the criteria developed by Davis (2). 4/ College counties are those containing a senior State college as of 1970. These two particular characteristics are important because recent research by Beale indicates that nonmetro areas classified as retirement counties demonstrated the most rapid growth in population, 1970-74; college counties were the second most rapidly growing over the same period (1, p. 955).

Adjacency to an SMSA is defined according to criteria established by Hines and others (3). Nonmetro counties are grouped according to the aggregate size of their urban populations and geographic proximity to metro areas. Proximity to metro areas, or adjacency, "is indicated by geographic contiguity and at least 1 percent of the labor force commuting to the metro central county for work" (3, p. 3). This adjacency measure approximates the degree of "urban sprawl" resulting from larger population and changing economic activity.

The U.S. Department of Agriculture (USDA) (7) in recent research has constructed indexes of well-being for counties in order to report on patterns of well-being by region and place of residence. Four indexes were defined as of 1970--socioeconomic status, health status, family status, and alienation. The profile of a county's level of income, poverty, education, and dwellings with complete plumbing was treated as socioeconomic status. This concept is indicative of a county's economic base and standard of living. The health status index reflects physical health problems of a county's total population. Total mortality rate, infant mortality rate, and mortality

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3/ The industries used in this report are those identified by the Bureau of Economic Analysis (9, 10).

4/ Davis defined a retirement county as one where the change in the 60 and older population during 1970-75 was greater than 11 percent; at least 32 percent of the 1970-74 change in personal income was accounted for by transfer payments, dividends, interest, and rent; the county experienced positive net migration, and net migration accounted for more than 50 percent of population growth during 1970-74 (2).

from influenza and pneumonia are the three indicators determining health status. Family status commands an important position in social well-being research and correlates positively with the previous two social indicators. This status is measured by three indicators--proportions of children 18 years and under living with both parents, difference in percentage of males and females in the labor force for persons 16 years and older, and percentage of families headed by females. In order to indicate the level of "personal alienation from group life" among a population, an index of alienation was devised. It is measured by two indicators--mortality from suicides and from cirrhosis of the liver (a result of alcoholism).

CLASSIFICATION

For purposes of this study, persistent low-income (PLI) counties as of 1969 are defined as those in the bottom quintile of a national ranking of nonmetro counties by per capita income in the years 1950, 1959, and 1969. Using this definition, 2,446 nonmetro counties in the United States were ranked from highest to lowest for per capita income in 1950, 1959, and 1969. 5/ These national rankings were then divided into quintiles, with the bottom quintile counties classified as low income. 6/ Counties falling in the bottom quintile for all 3 years were designated PLI counties. 7/

A county was classified PLI in 1975 if it appeared in the bottom quintile of the national nonmetro income ranking in the years 1950, 1959, 1969, and 1975.

LOCATION OF PERSISTENT LOW-INCOME COUNTIES

Of the 298 counties with a 1969 PLI designation, 94 percent were located in the southern census region; 5 percent were found in the north central census region; 1 percent was distributed throughout the western census region; no PLI counties were located in the northeast census region (table 1, fig. 1). Eleven of the 15 PLI counties located in the north central census region border the southern census region. At the State level, 4 of the 22 States with PLI counties accounted for over 50 percent of all PLI counties as of 1969. The four included Georgia (12.4 percent of PLI counties), Kentucky (14.1 percent), Mississippi (15.8 percent), and Tennessee (10.1 percent). All four States with a large concentration of PLI counties were located in the southern census region.

Using the definitions outlined earlier, 255 nonmetro counties were classified as PLI in 1975. The number of PLI counties declined by 43 over the 6-year interval (14 percent). Almost all the counties that lost their PLI designation during 1969-75 were located in the South. The South Atlantic census division lost 20 PLI counties; the east south central division, 12; and the west south central division, 10. Three States account for over 50 percent of the decline, 8/ and two of those, Georgia and Kentucky, previously reported relatively high concentrations of PLI counties.

The fact that a high concentration of PLI counties fell within the southern census region should not come as a surprise even to the most casual observer of regional development trends. In 1969, this area had the lowest per capita income of all census

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5/ Nonmetro areas in Alaska were omitted from the classification scheme due to data tabulation problems. If these counties were included, the total number of nonmetro counties in the United States would be 2,469 using 1974 OMB designations.

6/ Counties in the bottom quintile for each year had a per capita income equal to or below $670 in 1950, $1,099 in 1959, $2,220 in 1969, and $3,853 in 1975.

7/ Appendix A lists PLI counties by State for 1969 and 1975.

8/ Georgia lost 10 PLI counties, and Kentucky and Arkansas lost 7 apiece.

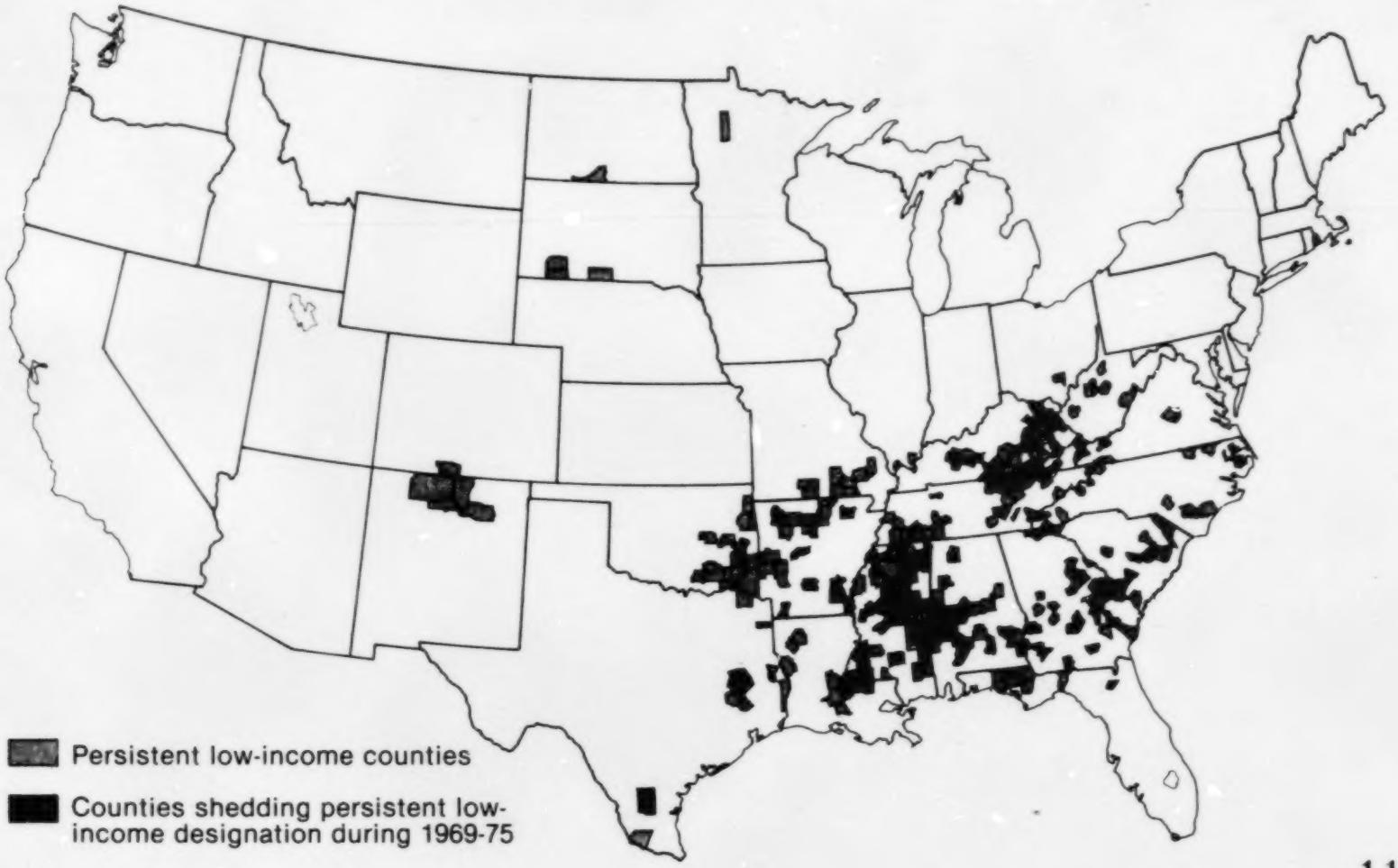
Table 1—Geographic distribution of persistent nonmetro low-income counties 1/

Region and State	1969	1975	Counties shedding PLI classification
	Number		
United States	298	255	43
Northeast	0	0	0
North Central	15	14	1
East North Central	3	2	1
Illinois	2	1	1
Ohio	1	1	0
West North Central	12	12	0
Minnesota	1	1	0
Missouri	8	8	0
North Dakota	1	1	0
South Dakota	2	2	0
South	279	237	42
South Atlantic	82	62	20
Florida	7	7	0
Georgia	37	27	10
North Carolina	14	12	2
South Carolina	11	7	4
Virginia	7	4	3
West Virginia	6	5	1
East South Central	140	128	12
Alabama	21	18	3
Kentucky	42	35	7
Mississippi	47	45	2
Tennessee	30	30	0
West South Central	57	47	10
Arkansas	21	14	7
Louisiana	13	13	0
Oklahoma	13	13	0
Texas	10	7	3
West	4	4	0
Mountain	4	4	0
Colorado	1	1	0
New Mexico	3	3	0

1/ All counties are grouped according to their official Office of Management and Budget 1974 metro-nonmetro designation.

Source: Bureau of Economic Analysis, U.S. Department of Commerce.

Nonmetro Persistent Low-Income Counties, 1969



Source (12).

Figure 1.

regions. The nonmetro South had a per capita income $573 lower than any other comparable place of residence (table 2).

Table 2--Per capita income by region and residence, absolute and percentage change, 1969-75

Region and residence	1969	1975	Change	
	Dollars			Percent
United States	3,732	5,902	2,170	58.1
Metro	4,043	6,290	2,247	55.5
Nonmetro	2,905	4,887	1,982	68.2
Northeast	4,171	6,318	2,147	51.4
Metro	4,312	6,518	2,206	51.1
Nonmetro	3,265	5,126	1,861	56.9
North Central	3,836	6,029	2,193	57.1
Metro	4,148	6,372	2,224	53.6
Nonmetro	3,151	5,287	2,136	67.7
South	3,171	5,293	2,122	66.9
Metro	3,554	5,833	2,279	64.1
Nonmetro	2,562	4,406	1,844	71.9
West 1/	3,958	6,262	2,304	58.2
Metro	4,162	6,508	2,364	56.3
Nonmetro	3,135	5,324	2,189	69.8

1/ Includes Alaska.

Source: Bureau of Economic Analysis, U.S. Department of Commerce.

Per capita incomes for the nonmetro parts of the north central and western census regions were approximately equal in 1969, yet the former area had 11 more PLI counties than the latter. One explanation for this discrepancy is that 11 of the 15 PLI counties in the north central census region lie within 100 miles of the southern region and may therefore be influenced by the same set of factors as similarly classified counties in the South (fig. 1).

Given the definitions of PLI counties for 1969 and 1975, being designated a nonmetro PLI county was basically a southern phenomenon as of 1969. This trend diminished somewhat during 1969-75.

SELECTED CHARACTERISTICS OF PERSISTENT LOW-INCOME COUNTIES

The average PLI county as of 1969 had per capita income, total population, and average earnings well below U.S. nonmetro averages (table 3). 9/ PLI counties were

9/ All aggregate values presented in table 3 and discussed in this section are means. The difference in per capita income is obvious given the definition of PLI.

Table 3--Selected characteristics for persistent low-income counties and total nonmetro counties, 1969

Item	Unit	Total nonmetro counties	PLI counties
Income characteristics:			
Per capita income	Dollars	2,905	1,880
Relative per capita income	Percent	77.8	50.3
Residence adjusted total personal income (RPI)	1,000 dollars	64,640	26,336
RPI by source:			
Wage and salary income	Percent	59.5	48.4
Proprietors' income	do.	15.5	18.1
Property income	do.	13.7	10.1
Transfer payments	do.	10.9	15.7
Employment and earnings characteristics:			
Total earnings	1,000 dollars	48,456	17,526
Average earnings per wage and salary employee	Dollars	6,965	5,945
Population:			
Average	Number	22,251	14,009
Percentage in wage and salary employment	Percent	31.3	21.0

	Total nonmetro counties				PLI counties			
	Earnings		Employment 1/		Earnings		Employment 1/	
	Mil. dol.	Pct.	No.	Pct.	Mil. dol.	Pct.	No.	Pct.
Major industry:								
Agriculture	6.3	12.9	336	3.8	3.7	21.0	239	5.3
Mining	1.3	2.6	142	1.6	.5	2.7	72	1.6
Contract construction	2.7	5.6	301	3.4	.9	4.9	104	2.3
Manufacturing	12.9	26.7	1,882	21.3	3.7	21.1	766	17.0
Transportation	2.7	5.5	322	3.6	.8	4.4	95	2.1
Wholesale and retail trade	7.0	14.4	1,183	13.4	2.2	12.6	374	8.3
Finance, insurance, etc.	1.3	2.7	168	1.9	.3	1.9	45	1.0
Services	5.5	11.3	1,083	12.2	1.8	10.5	540	12.0
Government	8.9	18.4	1,541	17.4	3.7	21.0	712	15.8
Total 2/	48.6	100.1	6,958	78.6	17.6	100.1	2,947	65.4

1/ Does not include self-employed workers, thus, does not add to 100 percent.
2/ Totals subject to rounding error.

also more dependent on proprietors' income (especially the farm component) and transfer payments than were all nonmetro counties. Manufacturing and government (primarily State and local government) were the largest sources of employment for both county types, but all nonmetro counties depended on these industries for relatively more employment than PLI counties. The only industrial classification in which PLI counties had relatively higher employment was agriculture (5.3 vs. 3.8 percent), and PLI counties relied on employment in the proprietors' category to a greater extent than all nonmetro counties (34.6 vs. 21.4 percent). 10/ Source of earnings data show that PLI counties were equally dependent on manufacturing, agriculture, and government on the average (each approximately 21 percent of total earnings), while all nonmetro counties relied on manufacturing, government, and wholesale and retail trade, in that order, for 60 percent of their earnings. A smaller percentage of PLI county residents than of all nonmetro county residents were wage and salary employees. On the average, 21 percent of a PLI county's population were engaged in wage and salary employment versus 31 percent for the average nonmetro county.

Four different indicators of social well-being are also detailed in table 3 for both PLI and all nonmetro counties as of 1970, where higher levels of socioeconomic status, health status, family status, and lower levels of alienation are represented by high scores. A comparison of indexes shows that on the average, conditions are more severe in PLI counties than in all nonmetro counties, except that residents are less alienated. These findings are consistent with recent research in social well-being that associates low socioeconomic status with high concentrations of minorities and the mostly White areas of Appalachia and the Ozarks (7). PLI counties have a relatively higher concentration of Blacks than do nonmetro counties (24.7 vs. 9.1 percent, respectively), and are largely located in the Ozarks and Appalachia (fig. 1). In fact, 61 PLI counties had populations that were predominantly (50 percent or greater) Black.

In general, counties with low socioeconomic status tend to have low health and family status. The same conditions of poverty, low median income, and lack of education underlying the socioeconomic index for PLI counties also influence health and family organization, historically related to basic economic conditions within the household unit. Since socioeconomic status is lower for PLI counties than for all nonmetro counties (96.1 vs. 66.2), family and health status variables are also lower for PLI counties. 11/

The index of alienation was also higher for PLI counties than for all nonmetro counties. This low level of alienation (high index indicates low alienation level) for PLI counties apparently indicates that residents of PLI counties are less alienated from group life than people residing in higher income nonmetro counties. Thus it appears that this index is not linked to poverty conditions for the areas under consideration.

PLI counties also appear less likely to have features or functions associated with rapid population growth than the average nonmetro county. Fewer PLI counties serve as retirement counties or as the location of a senior State college, two functions that Beale associates with more rapid nonmetro population growth (1). Also, since PLI counties are further removed from metro areas than other nonmetro counties, they do not

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10/ Since total employment equals total wage and salary employment plus total proprietors' employment, then total proprietors' employment equals total wage and salary employment subtracted from 100 percent.

11/ The reason that the difference in the health status index between PLI and nonmetro counties is not as large as the differences in the other two indexes mentioned above is that Ozark counties did not have low health status accompanying their low socioeconomic status (7).

seem as influenced by the "metropolitan sprawl" observed in recent years (1, p. 954-55). 12/

COUNTIES SHEDDING THEIR PERSISTENT LOW-INCOME STATUS, 1975

By 1975, 43 counties designated PLI in 1969 lost their persistent low-income status, 13/ leaving 255 PLI counties distributed mainly throughout the Southern United States. Of the 43 counties, 42 were located in the South, and Georgia, Kentucky, and Arkansas accounted for over half. Counties classified as PLI in 1975 demonstrated an 80.7-percent increase in per capita income during 1969-75 (table 4), while the 43 counties losing their persistent low-income status (LPLI) showed a 100.7-percent gain (table 5). However, per capita income grew much faster in both PLI and LPLI counties than in all nonmetro areas (68 percent) during the same period (table 6). Despite the more rapid income growth in PLI counties over the period, the difference in per capita income between all nometro counties and PLI counties increased by 1975.

Growth in wage and salary income accounted for over half the total increase in RPI during 1969-75 for all nonmetro counties (tables 3 and 6). The same was true for LPLI counties over the period (table 5). However, for those counties retaining PLI status in 1975, only two-fifths of their income growth was associated with an increase in wage and salary income. PLI counties in 1975 also lagged behind LPLI and all nonmetro counties in growth in proprietors' and property income. It appears that growth in transfer payments was an important contribution to overall income growth in PLI counties during this period. Transfer payments accounted for about one-third of the increase in PLI residence adjusted personal income by 1975, compared to about one-fifth for the other county types.

Possible causes for the differences in income growth patterns between PLI and LPLI counties can be determined by noting changes in dependence on various industries. LPLI counties were more dependent on earnings from agriculture and mining in 1969 than the other county type. By 1975, it appears that the average LPLI county had become even more dependent on earnings from extractive industries--approximately 40 percent from agriculture and mining (the corresponding 1969 figure was approximately 32 percent). Every other industry's share in total earnings (except contract construction) either remained constant or fell for LPLI counties, even though dollar earnings increased in every industrial classification. PLI counties, on the other hand, still depended on manufacturing and government, with approximately 45 percent of total earnings determined by these two industries. Also, percentage of earnings from agriculture, contract construction, and manufacturing fell during 1969-75. Thus, the improved competition in agriculture and mining during the early seventies accounted for most of the improvement in economic conditions in LPLI counties relative to those keeping their PLI designation.

On the employment side, LPLI counties still depended on manufacturing and government (although manufacturing employment was proportionately higher in 1969), but mining showed the largest gains in percentage of total employment. In the same vein, the relative employment picture for PLI counties improved slightly in mining, transportation, wholesale and retail trade, finance and insurance, and government. Relative losses occurred in agriculture, manufacturing, and services over the period. In both 1969 and 1975, LPLI counties had a larger proportion of their population in wage and

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12/ These last two points offer an explanation for the smaller rates of population growth and net migration associated with PLI counties.

13/ By 1975, these counties were no longer in the bottom quintile of all U.S. nonmetro counties ranked on the basis of per capita income.

salary employment than PLI counties, and the difference between the percentage employed widened over the 6-year interval.

Table 4--Selected characteristics of the 255 counties with persistent low-income status, 1969 and 1975

Item	Unit	1969	1975
Income characteristics:			
Per capita income	Dollars	1,826	3,299
Relative per capita income	Percent	48.9	55.8
Residence adjusted total personal income (RPI)	1,000 dollars	25,878	48,270
RPI by source:			
Wage and salary income	Percent	47.5	45.3
Proprietors' income	do.	18.2	12.7
Property income	do.	10.2	11.1
Transfer payments	do.	15.9	23.0
Employment and earnings characteristics:			
Total earnings	1,000 dollars	16,998	28,048
Average earnings per wage and salary employee	Dollars	5,908	8,474
Population:			
Average	Number	14,172	14,632
Percentage in wage and salary employment	Percent	20.3	22.6

	1969				1975			
	Earnings		Employment 1/		Earnings		Employment 1/	
	Mil. dol.	Pct.	No.	Pct.	Mil. dol.	Pct.	No.	Pct.
Major industry:								
Agriculture	3.5	20.3	219	4.9	4.0	14.3	226	4.6
Mining	.3	2.0	49	1.1	1.2	4.2	79	1.6
Contract construction	.8	5.0	103	2.3	1.4	4.9	113	2.3
Manufacturing	3.7	21.6	773	17.3	6.0	21.5	840	17.1
Transportation	.7	4.4	94	2.1	1.4	4.9	108	2.2
Wholesale and retail trade	2.2	12.8	366	8.2	3.8	13.4	437	8.9
Finance, insurance, etc.	.3	1.9	45	1.0	.7	2.6	79	1.6
Services	1.8	10.5	518	11.6	3.0	10.8	565	11.5
Government	3.7	21.6	710	15.9	6.5	23.2	864	17.6
Total 2/	17.0	100.1	2,877	64.4	28.0	99.8	3,311	67.4

1/ Does not include self-employed workers, thus, does not add to 100 percent.
2/ Totals subject to rounding error.

Table 5--Selected characteristics of the 43 counties shedding their persistent low-income status, 1969 and 1975

Item	Unit	1969	1975
Income characteristics:			
Per capita income	Dollars	2,039	4,275
Relative per capita income	Percent	54.6	72.4
Residence adjusted total personal income (RPI)	1,000 dollars	29,056	61,991
RPI by source:			
Wage and salary income	Percent	53.3	51.8
Proprietors' income	do.	17.8	18.6
Property income	do.	9.8	9.8
Transfer payments	do.	14.9	19.1
Employment and earnings characteristics:			
Total earnings	1,000 dollars	20,659	43,679
Average earnings per wage and salary employee	Dollars	6,163	11,067
Population:			
Average	Number	14,250	14,501
Percentage in wage and salary employment	Percent	23.4	27.2

	1969				1975			
	Earnings		Employment 1/		Earnings		Employment 1/	
	Mil. dol.	Pct.	No.	Pct.	Mil. dol.	Pct.	No.	Pct.
Major industry:								
Agriculture	5.3	25.7	361	7.7	12.1	27.6	394	7.4
Mining	1.4	6.8	192	4.1	5.0	11.5	324	6.1
Contract construction	.9	4.4	113	2.4	2.1	4.9	165	3.1
Manufacturing	3.6	17.4	709	15.1	6.9	15.9	793	14.9
Transportation	.9	4.4	108	2.3	1.7	3.8	128	2.4
Wholesale and retail trade	2.5	12.1	418	8.9	4.5	10.4	500	9.4
Finance, insurance, etc.	.4	1.9	52	1.1	.7	1.7	75	1.4
Services	2.1	10.2	667	14.2	3.7	8.5	697	13.1
Government	3.2	15.5	723	15.6	7.0	15.6	872	16.4
Total 2/	20.5	98.4	3,343	71.4	43.7	99.9	3,948	74.2

1/ Does not include self-employed workers, thus, does not add to 100 percent.
2/ Totals subject to rounding error.

As of 1975, then, both LPLI and PLI counties depended on the same three industries (agriculture, manufacturing, and government) for over 59 percent of total earnings, yet their order of importance was different for each county type. The LPLI county depended on agriculture for its largest source of earnings, while the PLI county received the

Table 6--Selected characteristics of nonmetro counties, 1975

Item	Unit	Total nonmetro counties
Income characteristics:		
Per capita income	Dollars	4,888
Relative per capita income	Percent	82.8
Residence adjusted total personal income (RPI)	1,000 dollars	116,589
RPI by source:		
Wage and salary income	Percent	56.3
Proprietors' income	do.	13.5
Property income	do.	14.2
Transfer payments	do.	16.0
Employment and earnings characteristics:		
Total earnings	1,000 dollars	81,406
Average earnings per wage and salary employee	Dollars	10,456
Population:		
Average	Number	23,852
Percentage in wage and salary employment	Percent	32.5

	Earnings		Employment 1/	
	Mil. dol.	Pct.	No.	Pct.
Major industry:				
Agriculture	10.7	13.1	378	3.9
Mining	3.1	3.8	175	1.8
Contract construction	4.6	5.7	330	3.4
Manufacturing	19.7	24.2	1,862	19.2
Transportation	4.6	5.7	349	3.6
Wholesale and retail trade	11.8	14.5	1,425	14.7
Finance, insurance, etc.	2.3	2.8	223	2.3
Services	9.2	11.3	1,231	12.7
Government	15.4	18.9	1,784	18.4
Total 2/	81.4	100.0	7,757	80.0

1/ Does not include self-employed workers, thus, does not add to 100 percent.
2/ Totals subject to rounding error.

largest share of its income from government. A comparison of dollar earnings between LPLI and PLI counties as of 1975 showed that LPLI counties had larger earnings in every industry except the industries which include finance, insurance, and the like (both county types had $700,000 in earnings from these industries). A few of these differences are quite large, with LPLI counties receiving $8.1, $3.8, and $0.9 million more

than PLI counties in earnings from agriculture, mining, and manufacturing, respectively. On the employment side, both LPLI and PLI counties depend on the same industries (government, manufacturing, and services) for a large portion of total employment, and the order of importance is the same for both county classifications.

Despite improved income levels in LPLI counties, they still experienced a slight net outmigration in 1975 (table 7). This might be explained in part by the fact that a higher proportion of LPLI counties' population was Black relative to the other county types, and that the Black population has generally continued to migrate while the White population has been "turning around." In addition, LPLI counties were less likely retirement counties or the center of a senior State college.

Table 7--Selected characteristics of persistent low-income counties, counties shedding their low-income status, and total nonmetro counties, 1969 and 1975

Item	1969		1975		
	Total nonmetro counties	PLI counties	Total nonmetro counties	Counties shedding PLI status	PLI counties
			Number		
Counties	2,469	298	2,469	43	255
			1970 = 100		
Indicators of social well-being:					
Socioeconomic status	96.1	66.0	96.1	66.0	66.3
Health status	98.5	89.0	98.5	80.3	90.4
Family status	100.2	76.8	100.2	75.2	77.1
Alienation	100.2	106.0	100.2	106.2	105.9
			Number		
Other characteristics:					
Population (1975)	22,251	14,009	23,852	14,501	14,632
			Percent		
Population growth (1970-75)	--	--	6.6	2.1	5.9
Net migration rate (1970-75)	--	--	3.4	-0.8	2.7
Percentage Black	9.1	24.7	9.1	30.6	23.7
Counties classified as:					
Retirement--					
1970	14.6	14.4	14.6	4.7	16.1
1974	21.0	18.8	21.0	4.7	21.2
College (1970)	7.6	3.4	7.6	2.3	3.5
Adjacent to SMSA (1974)	39.2	33.2	39.2	39.5	32.2
Nonadjacent to SMSA (1974)	60.8	66.8	60.8	60.5	67.8

-- = Not available.

The indexes of social well-being for LPLI and PLI counties are approximately equal, except for the health status index where LPLI counties show a higher incidence of physical health problems (table 7). The larger concentration of Blacks--a population group with a high incidence of health problems--in LPLI counties (30.6 vs. 23.7 percent) probably accounts for discrepancy.

STATISTICAL DIFFERENCES BETWEEN LPLI AND PLI COUNTIES, 1975

As demonstrated, transfer payments, earnings from agriculture, mining, contract construction, manufacturing, and population growth rates vary between county types. Yet comparison of mean values for these characteristics may lead to inappropriate conclusions and incorrect policy prescriptions. This section summarizes the statistical analysis conducted on the data (appendix B). A qualitative choice model utilizing multiple regression techniques to determine the factors most important in explaining loss of persistent low-income status during 1970-75 was used.

Ten socioeconomic characteristics were identified by the analysis. Five are earnings characteristics, two are sources of income variables, and one characteristic each comes from the employment and other subdivisions.

The results of the statistical analysis showed that five of the most important variables in explaining loss of low-income status during 1970-75 were earnings parameters. These included earnings from agriculture, mining, manufacturing, government, and contract construction. The earlier analysis suggested that LPLI counties depended more on earnings from agriculture and mining than did PLI counties. Statistical analysis, where per capita change in earnings from both agriculture and mining were the two most important variables in explaining loss of low-income status, seems to support this inference. When combined, earnings from agriculture and mining account for over 66 percent of the model's explained variation in the dependent variable.

Per capita change in earnings from manufacturing, government, and contract construction represent the fourth, sixth, and eighth most important independent variables, respectively. Their inclusion in the regression adds a 12-percent increment to explained variation. The coefficients are positive and significant due to the relatively large increases in the dollar value of these three earnings figures for LPLI counties. After agriculture and mining, manufacturing, government, and contract construction showed the largest change in absolute earnings for LPLI counties--$3.3, $3.8, and $1.2 million, respectively. All increments were substantially larger than those for PLI counties.

The only source of income variables directly included in the model--property income and transfer payments--are both positive and significant. When combined, they explain 10 percent of the explained variance in the dependent variables. As of 1975, PLI counties depend on both these income sources for a larger percent of RPI than do LPLI counties. But the dollar changes in both property and transfer incomes are on the average substantially larger for LPLI counties ($10.7 vs. $9.7 million) and are therefore partially responsible for 43 counties raising their income above the persistent low-income level. The property income variable has dividends, interest, and rent as its major components. While the data do not lend themselves to this level of disaggregation, the rent component of property income may be the largest for LPLI counties, given their dependence on agriculture and mining.

Rate of population growth, 1970-75, was negatively related to the income status variable, and its coefficient was significant. Perhaps the dominance of agriculture and mining in LPLI counties does not generate the number and type of jobs needed to employ the indigenous population. The resulting lack of employment and earnings income may induce some residents to leave. This is partially verified by the fact that only

one employment variable (percentage of total employment change related to transportation) was identified as having an impact, though very small and negative, on low-income status.

When combined, the last two significant variables--socioeconomic status and percentage of total employment change related to transportation--were of little help in explaining variation in the dependent variable (less than 4 percent). The positive sign associated with socioeconomic status suggests, along with the quality of life data, that economic growth as evidenced by the large increase in per capita incomes of LPLI counties does not necessarily mean a change in social well-being. The time period under study here allows for certain socioeconomic characteristics of LPLI counties to change for the better, yet it appears more time is needed before improved income levels are reflected in lifestyles and social conditions. The negative sign on the transportation employment variable appears to indicate that even though employment in transportation, communications, and public utilities increased slightly in LPLI counties since 1969 (table 5), the income generated was not sufficient to raise counties above the low-income status.

The above analysis suggests that the private sector was the vehicle through which 43 counties shed their persistent low-income status. It is less clear what role, if any, the Federal sector had in improving income status of these counties. Federal outlays data contain some evidence (table 8). These data give a general idea of the Federal services available to nonmetro areas.

If a substantial Federal effort was directed toward improving the conditions in low-income areas, this should be reflected in larger per capita expenditures in these areas. Per capita outlays in both PLI and LPLI counties were actually slightly below those in all nonmetro areas. Per capita outlays for LPLI counties were only $18 larger than for PLI counties--$1,102 vs. $1,084. Outlays by program grouping did not differ greatly between the two county types, nor did they differ from per capita expenditures for all nonmetro counties.

These results support the hypothesis that the improved income status of the 43 counties during the 1970-75 period was not the result of Federal efforts.

IMPLICATIONS

This analysis has demonstrated that the most important variables in determining a county's ability to shed its persistent low-income status have been earnings from agriculture and mining. Since many LPLI counties are located in the soft coal regions of West Virginia, Virginia, and Kentucky, they were in a particular position to take advantage of the increase in soft coal prices during the early seventies. Ten of the 43 counties that shed their persistent low-income status by 1975 depend almost entirely on mining for increases in total personal income. Nine of the 10 extract bituminous coal, while the other produces crude petroleum and natural gas. Because most projections of coal prices show increases, those LPLI counties that depend on mining could be expected to make further gains towards income equality with metro areas--the goal of the Rural Development Act of 1972. 14/

The future is less certain, however, for those counties shedding their low-income status as a result of increases in agricultural prices. Peanuts, soybeans, and tobacco

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14/ During 1970-75, the price of a short ton of bituminous coal, measured in terms of average value at mine, increased 207 percent from $6.26 to $19.24. Over the same period, national production of soft coal only increased 7 percent, from 603 million to 648 million short tons (14).

Table 8--Federal outlays per capita, 1970 and 1975

Item	Unit	Agricultural and natural resources	Community and industrial development	Housing	Defense, space, and atomic energy	Human resource development	Total outlays
Nonmetro counties, 2,469:							
1970	Dol.	110	24	61	134	237	566
1975	do.	81	160	49	200	642	1,132
Absolute change	do.	-29	136	-12	66	405	566
Percentage change	Pct.	-26.4	566.7	-19.7	49.3	170.9	100.4
LPLI counties, 43:							
1970	Dol.	140	32	59	37	298	566
1975	do.	102	170	27	39	763	1,102
Absolute change	do.	-38	138	-32	2	465	536
Percentage change	Pct.	-27.1	431.3	-54.2	5.4	156.0	94.7
PLI counties, 255:							
1970	Dol.	110	40	88	30	287	555
1975	do.	90	187	45	63	699	1,084
Absolute change	do.	-20	147	-43	33	412	529
Percentage change	Pct.	-18.2	367.5	-48.9	110.0	143.6	95.8

Source: Community Services Administration.

were the three largest crops in LPLI counties (in terms of volume of production) in 1974, and price changes for the three have been somewhat volatile since 1969. If agricultural income declines, the importance of earnings from agriculture in determining low-income status may dwindle, and some LPLI counties could thus return to the chronic low-income group.

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APPENDIX A--Persistent Low-Income Counties by State, 1969 and 1975 1/

Alabama

Barbour
Bibb
Bullock
Chilton
Choctaw
Clay
Conecuh
Coosa
Crenshaw
*Fayette
Greene
Hale
*Henry
*Lawrence
Lowndes
Marengo
Monroe
Perry
Pickens
Sumter
Wilcox

Arkansas

*Chicot
Cleveland
*Dallas
*Drew
Fulton
Izard
Johnson
*Lafayette
*Lawrence
Lee
*Lincoln
*Madison
Montgomery
Newton
Perry
Pike
Polk
Scott
Searcy
Stone
Van Buren

Colorado

Conejos

Florida

Calhoun
Holmes
Jackson
Jefferson
Union
Walton
Washington

Georgia

Appling
Atkinson
*Baker
*Baldwin
*Brooks
Burke
*Calhoun
*Clay
Crawford
*Dodge
Emanuel
Fannin
Greene
Hancock
Jefferson
Jenkins
Johnson
Lincoln
Long
McIntosh
Macon
*Montgomery
Oglethorpe
Pike
Quitman
Rabun
Screven
*Stewart
Talbot
Taliaferro
Tattnall
Towns
Treutlen
Union
Warren
*Webster
*Wilcox

Illinois

Pope
*Pulaski

Kentucky

Adair
*Bath
*Bell
Breathitt
Butler
Carter
Casey
Clay
Clinton
Cumberland
Edmonson
Elliott
Estill
Grayson
Hart
Jackson
*Johnson
Knott
Knox
Lawrence
Lee
Leslie
*Letcher
Lewis
Lincoln
McCreary
Magoffin
*Martin
Menifee
Metcalfe
Monroe
Morgan
*Ohio
Owsley
Powell
Pulaski
Rockcastle
Rowan
Russell
Wayne
*Whitley
Wolfe

Louisiana

Avoyelles
Bienville
East Felicia
Madison
Pointe Coupe
Red River
Sabine
St. Helena
St. Landry
St. Martin
Tensas
West Carroll
West Felicia

Minnesota

Clearwater

Mississippi

Amite
Attala
Benton
Bolivar
Calhoun
Carroll
Chickasaw
Choctaw
Claiborne
Clark
Copiah
Covington
Franklin
Greene
Holmes
Humphreys
Itawamba
Jasper
Jefferson
Jefferson Da
Kemper
Lafayette
Leake
Madison
Marshall
Montgomery
Neshoba
Newton
Noxubee
Oktibbeha
Panola
Perry
Pontotoc
Prentiss
Quitman
*Sharkey
Tallahatchie
Tate
Tippah
Tishomingo
*Tunica
Walthall
Wayne
Webster
Wilkinson
Winston
Yalobusha

Missouri

Bollinger
Carter
Douglas
Oregon
Ozark
Ripley
Shannon
Wayne

New Mexico

Mora
Rio Arriba
Taos

North Carolina

Ashe
Avery
Bladen
Clay
Graham
Hoke
Hyde
Jackson
Northampton
Pender
*Perquimans
*Tyrrell
Warren
Yancey

North Dakota

Sioux

Ohio

Vinton

Oklahoma

Adair
Atoka
Cherokee
Chocktaw
Coal
Delaware
Haskell
Johnston
Latimer

1/ See footnote at end of appendix.

APPENDIX A--Persistent Low-Income Counties by State, 1969 and 1975 1/--Continued

McCurtain
McIntosh
Okfuskee
Pushmataha

South Carolina

Allendale
*Bamberg
*Calhoun
Clarendon
Dillon
Jasper
Lee
*Marion
Marlboro
*Saluda
Williamsburg

South Dakota

Shannon
Todd

Tennessee

Bledsoe
Campbell
Chester
Claiborne
Clay
Cocke
Cumberland
Fayette
Fentress
Grainger
Grundy
Hancock
Hardeman
Hardin
Haywood
Houston
Jackson
Johnson
Lauderdale
Lewis
McNairy
Meigs
Monroe
Morgan
Overton
Perry
Pickett
Scott
Van Buren
Wayne

Texas

*Duval
*Houston
*Marion
Newton
Red River
San Augustin
San Jacinto
Starr
Trinity
Walker

Virginia

*Bland
*Buchanan
Buckingham
Cumberland
Grayson
Lee
*Russell

West Virginia

Braxton
*Calhoun
Doddridge
Lincoln
Pocahontas
Roane

1/ Starred counties lost their low-income designation by 1975.

APPENDIX B--Regression Analysis

A linear regression model with a dichotomous dependent variable was used in this study where the dependent variable is associated with two qualitative choices or alternatives. The usefulness of a qualitative choice model lies in its ability to determine the probability that a county with a particular set of socioeconomic characteristics "chooses" to shed its persistent low-income status (become an LPLI county) rather than remain a PLI county. 1/ The regression specification of the linear probability model takes a standard form with the dependent variable assuming a value of 1 if a county lost its persistent low-income status by 1975, and 0 if a county retains its low-income status in 1975. Twenty-nine of the socioeconomic characteristics listed in table 3 serve as independent variables. 2/

Appendix table 1 reports the results of the regression analysis on the linear probability model using the ordinary least squares regression option forward (stepwise) selection. The forward selection procedure allows the variable that explains the greatest amount of variance in the dependent variable to enter the equation first. The variable that explains the greatest amount of variance in conjunction with the first will enter second, and so on (5).

The objective of this procedure was to find the ordered subset of socioeconomic characteristics that induced 43 counties to shed their low-income status. This goal is achieved by analyzing the first 10 independent variables in appendix table 1 chosen according to the significance of their associated F-values (column 3). Combined, these variables account for almost 95 percent of the explained variation in the dependent variable. A positive sign on Beta indicates a direct association between an independent variable and the one value of the dependent variable--loss of persistent low-income status by 1975, while a negative sign supposes an indirect relationship between the two.

1/ Several types of qualitative choice models exist. The form examined in this study is the linear probability model. Some difficulties associated with the interpretation of the probabilistic nature of this model include heteroscedasticity and biased predictors. Yet the presence of heteroscedastic errors does not result in either biased or inconsistent estimators and was not corrected. It is also possible that predicted values of the dependent variable may lie outside the actual range of observations [(0, 1) in this case]. This weakness becomes apparent when the model is used for prediction. Since the linear probability model is used here for identification purposes and not prediction, the second weakness should cause no serious problems (6, p. 241).

2/ Wage and salary and proprietors' sources of income are excluded from the multiple regression analysis because by definition their combination equals total earnings. All earnings variables are used in their absence.

Appendix table 1--Stepwise multiple regression estimates 1/

Independent variables	Beta	Standard error B	F
Per capita change in earnings from agriculture 2/	.56835	.00006	156.569
Per capita change in earnings from mining	.37254	.00006	59.931
Per capita change in property income 3/	.11541	.00029	4.658
Per capita change in earnings from manufacturing	.10418	.00010	4.748
Population growth rate (1970-75)	-.29956	.00748	3.316
Per capita change in earnings from government	.16687	.00018	8.786
Per capita change in transfer income	.17013	.00022	12.689
Per capita change in earnings from contract construction	.14408	.00010	9.867
Index of socioeconomic status (1970)	.12145	.00155	4.480
Percent of total employment change related to transportation 4/	-.11000	.06012	2.505
Retirement (1970)	-.06065	.03114	1.518
Per capita change in earnings from transportation, etc.	.04536	.00041	.998
Index of alienation (1970)	.05229	.00113	1.110
College (1970)	-.05758	.09682	1.347
Percent of total employment change related to manufacturing	-.16195	.05245	.491
Per capita change in earnings from services	.07749	.00033	2.586
Per capita change in earnings from finance, insurance, etc.	-.08089	.00094	1.952

See footnote at end of table.

Continued--

Appendix table 1--Stepwise multiple regression estimates 1/--Continued

Independent variables	Beta	Standard error B	F
Percent of total employment change related to services	-.19465	.05875	1.602
Per capita change in earnings from wholesale and retail trade	.02996	.00034	.339
Net migration rate (1970-75)	.17470	.00775	.985
Percent Black (1970)	.11630	.00122	1.924
Family status index (1970)	.08610	.00143	1.268
Percent of total employment change related to mining	-.10782	.06233	.545
Percent of total employment change related to finance, insurance, etc.	-.02539	.05364	.090
Percent of total employment change related to government	-.49704	.06559	1.476
Percent of total employment change related to wholesale and retail trade	-.05429	.03711	.120
Percent of total employment change related to contract construction	-.20424	.05761	1.318
Percent of total employment change related to agriculture	-.58147	.04892	.998
Health status index (1970)	-.03016	.00091	.239

R-square	.54783
Adjusted R-square	.49890
Standard error	.24916
F-statistic	11.19639

1/ See footnote 1, appendix B.

2/ All industry per capita change variables equal the change in a county's earnings from a particular industry during 1969-75 divided by the 1975 population of that county.

3/ All source of income per capita change variables equal the change in a county's income from a particular source during 1969-75 divided by the 1975 population of that county.

4/ All percentage of total employment change variables equal the change in a county's employment for a particular industry during 1969-75 divided by the change in a county's total wage and salary employment during 1969-75.

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